**Worksheet 8B- Residuals NEED: group ROOKIES (lists SLRY and PICK)**

The following table pertains to basketball players selected in the first round of the 1991 BA draft. It lists the draft number of each player and the annual salary (in $) of the contract that the player signed. The two missing entries are for players who signed with European teams.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pick #** | **Salary** | **Pick #** | **Salary** | **Pick #** | **Salary** |
| 1 | 3,333,333 | 10 | 1,010,652 | 19 | 828,750 |
| 2 | 2,900,000 | 11 | 997,120 | 20 | 740,000 |
| 3 | 2,867,100 | 12 | 1,370,000 | 21 | 775,000 |
| 4 | 2,750,000 | 13 | 817,000 | 22 | 180,000 |
| 5 | 2,458,333 | 14 | 675,000 | 23 | 550,000 |
| 6 | 1,736,250 | 15 | \* | 24 | 610,000 |
| 7 | 1,590,000 | 16 | 1,120,000 | 25 | \* |
| 8 | 1,500,000 | 17 | 1,120,000 | 26 | 180,000 |
| 9 | 1,400,000 | 18 | 875,000 | 27 | 605,000 |

1. Create and describe a scatterplot (sketch it here) and describe the plot.
2. Compute the LSR line, and r and r2. Add the line to your plot.
3. What proportion of the variability in salary is explained by the variability in the draft number?
4. Calculate the predicted salary for a player picked 12th. Also calculate the residual for this value. Was your **prediction** an overestimate or an underestimate?
5. What salary would the line predict for the players picked 15th and 25th?
6. By how much does the LSR line predict the salary to drop for each additional draft number? (each change of 1 in the x-variable)
7. Create a residual plot (sketch it here). Does a linear model appear to be the best model?
8. Verify that the sum of the residuals is 0. (sum the list RESID)
9. For observations with positive residual values, is the actual salary greater or less than the predicted salary? Are these over- or underestimates?
10. For observations with negative residual values, is the actual salary greater or less than the predicted salary? Are these over- or underestimates?
11. Do there appear to be any outliers or influential points?